In the Claims

Please replace all prior versions of claims in the application with the following claims:

1 – 5. (Cancelled)

6. (Withdrawn) A method for plasma doping, comprising the steps of:

supporting a workpiece on a platen in a plasma doping chamber;

generating a plasma and accelerating ions from the plasma into the workpiece; and

rotating the workpiece.

7. (Withdrawn) A method as defined in claim 6, wherein the workpiece comprises a semiconductor wafer and wherein the step of rotating the workpiece comprises rotating the platen such that the semiconductor wafer rotates about its center.

8. (Withdrawn) Plasma doping apparatus as defined in claim 6, further comprising the step of applying pulses having a pulse rate between the platen and an anode in the plasma doping chamber, wherein the pulse rate is much greater than a rotation rate of the workpiece.

9. (Withdrawn) A method as defined in claim 6, wherein the workpiece is rotated at a speed in the range of about 10 to 600 rpm.

10 - 14. (Cancelled)

15. (Withdrawn) A method for plasma doping, comprising the steps of:

supporting a workpiece on a platen in a plasma doping chamber;

positioning an anode in the plasma doping chamber in spaced relationship to the platen, said anode having two or more anode elements;

adjusting the spacing between one or more of said anode elements and the platen; and

generating a plasma between the anode and the platen and accelerating ions from the plasma in to the workpiece.

16. (Withdrawn) A method as defined in claim 15, wherein the workpiece comprises a semiconductor wafer and wherein the step of adjusting the spacing comprises adjusting the spacing of said anode elements as a function of radius relative to the center of the semiconductor wafer.

17. (Withdrawn) A method as defined in claim 15, wherein the anode elements comprise annular rings and wherein the step of adjusting the spacing comprises adjusting the spacing between one or more of the annular rings and the platen.

18. (Currently Amended) Plasma doping apparatus comprising:

a plasma doping chamber;

a platen in said plasma doping chamber for supporting a workpiece;

an anode spaced from said platen in said plasma doping chamber;

a process gas source coupled to said plasma doping chamber, wherein a plasma containing ions of the process gas is produced in a plasma discharge region between said anode and said platen;

a pulse source for applying pulses between said platen and said anode for accelerating ions from the plasma into the workpiece;

a hollow electrode surrounding the plasma discharge region disposed within the plasma doping chamber; and

a first plurality of elongated magnetic elements affixed within said hollow electrode configured to control a radial density distribution of the plasma and thereby the dose uniformity of the ions implanted into the workpiece.

19. (Previously Amended) Plasma doping apparatus as defined in claim 18, further comprising a second plurality of magnetic elements disposed on or near said anode.

20. (Previously Amended) Plasma doping apparatus as defined in claim 19, wherein said second plurality of magnetic elements are arranged in one or more annular rings.

21. (Previously Amended) Plasma doping apparatus as defined in claim 19, wherein said second plurality of magnetic elements are radially aligned to form a spoke configuration.

22. (Previously Amended) Plasma doping apparatus as defined in claim 18, wherein said first plurality of elongated magnetic elements have alternating polarities facing the plasma discharge region.

23. (Previously Amended) Plasma doping apparatus as defined in claim 18, wherein said first plurality of elongated magnetic elements are configured to increase the plasma density in an outer portion of the plasma discharge region.

24. (Previously Amended) Plasma doping apparatus as defined in claim 18, wherein said first plurality of elongated magnetic elements are arranged in a cylindrical array around the plasma discharge region.

25. (Previously Amended) Plasma doping apparatus as defined in claim 24, wherein said first plurality of elongated magnetic elements comprise axial magnetic elements having alternating polarities facing the plasma discharge region.

26. (Cancelled)

27. (Previously Amended) Plasma doping apparatus as defined in claim 18, wherein said first plurality of elongated magnetic elements produce cusp magnetic fields in a region surrounding the plasma discharge region.

28. (Withdrawn) A method for plasma doping, comprising the steps of:

supporting a workpiece on a platen in a plasma doping chamber;

generating a plasma in the plasma doping chamber an accelerating ions from the plasma into the workpiece; and

magnetically controlling the radial density distribution of the plasma to thereby control the dose uniformity of the ions implanted into the workpiece.

29. (Withdrawn) A method as defined in claim 28, wherein the step of magnetically controlling the radial density distribution of the plasma comprises controlling the radial density distribution with magnetic elements that produce a rescribed radial magnetic field profile

30. (Withdrawn) A method as defined in claim 28, wherein the step of magnetically controlling the radial density distribution of the plasma comprises controlling the radial density distribution with one or more annular rings of magnetic elements disposed adjacent to the plasma.

31. (Withdrawn) A method as defined in claim 28, wherein the step of magnetically controlling the radial density distribution of the plasma comprises controlling the radial density distribution with radially aligned magnetic elements which form a spoke configuration.

32. (Withdrawn) A method as defined in claim 28, wherein the step of magnetically controlling the radial density distribution of the plasma comprises increasing the plasma density in an outer portion of the plasma doping chamber.

33. (Withdrawn) A method as defined in claim 28, wherein the step of magnetically controlling the radial density distribution of the plasma comprises increasing the plasma

density in a specified portion of the plasma doping chamber by providing magnetic fields adjacent to the specified portion of the plasma doping chamber.

34. (Previously Presented) Plasma doping apparatus comprising:

a plasma doping chamber;

a platen in said plasma doping chamber for supporting a workpiece;

an adjustable anode positioned in said plasma doping chamber and spaced from said platen, said adjustable anode configured to be movable within said plasma doping chamber;

a process gas source coupled to said plasma doping chamber, wherein a plasma containing ions of the process gas is produced in a plasma discharge region between said anode and said platen;

a pulse source for applying pulses between said platen and said anode for accelerating ions from the plasma into the workpiece; and

a first plurality of magnetic elements disposed on said adjustable anode and being movable within said plasma doping chamber to control a radial density distribution of the plasma and thereby the dose uniformity of the ions implanted into the workpiece.

35. (Previously Presented) Plasma doping apparatus as defined in claim 34, wherein said anode and said first plurality of magnetic elements disposed on said anode are movable in a direction perpendicular to said platen.

36. (Previously Presented) Plasma doping apparatus as defined in claim 34, wherein said first plurality of magnetic elements are arranged in one or more annular rings.

37. (Previously Presented) Plasma doping apparatus as defined in claim 34, wherein said first plurality of magnetic elements are radially aligned to form a spoke configuration.

38. (Previously Presented) Plasma doping apparatus as defined in claim 34, wherein said first plurality of magnetic elements have alternating polarities facing the plasma discharge region.

39. (Previously Presented) Plasma doping apparatus as defined in claim 34, further comprising a hollow electrode surrounding the plasma discharge region and a second plurality of elongated magnetic elements affixed within said hollow electrode.